Breastfeeding: An Ancient Paradigm in Today's World, with Lynn R. Goldman

Ernie Hood

A number of recent studies have reported finding measurable levels of persistent organic pollutants in human milk, and many daily activities expose nursing women to toxic chemicals that can end up in their milk. Although many of these chemicals can cause adverse health effects in humans, studies consistently conclude that, overall, the benefits of breastfeeding outweigh the potential toxicity threats posed to nursing children. In this podcast, Lynn R. Goldman discusses why breastfeeding is still the optimal method of infant feeding despite the presence of pollutants in human milk, and describes precautions that mothers can take to protect their milk. Goldman is a principal investigator for the Johns Hopkins University Center for the National Children's Study and a coauthor of "Global screening of human cord blood proteomes for biomarkers of toxic exposure and effect."

AHEARN: It's *The Researcher's Perspective*. I'm Ashley Ahearn.

A number of studies have reported that chemicals such as pesticides, polychlorinated biphenyls, dioxins, and polybrominated flame retardants are showing up in the milk of mothers around the world.[i] These chemicals aren't good for people, so can it really still be safe to breastfeed babies?

That's the question science writer Ernie Hood asked Dr. Lynn R. Goldman. Goldman is principal investigator for the Johns Hopkins University Center for the National Children's Study.[ii] She told Hood why breast milk is still critical to the healthy development of babies, despite chemical contamination.

GOLDMAN: Generally we know that there are enormous benefits to breastfeeding, and not the least of which is that human milk is the only milk that is actually specifically designed and perfectly designed for the human infant. At the same time, when we look at human milk, and not surprisingly, when we look for the chemicals that tend to persist in our bodies, we see those chemicals in human milk. And the good news is that even though we see these environmental chemicals in the human milk, that the risks that are conferred by these chemicals are much, much lower [than] and very much offset by the

benefits of breastfeeding.

HOOD: Where do we stand at this point in terms of the science in our knowledge of the benefits of breastfeeding?

GOLDMAN: Here's what we know in terms of the science. One, we know that the first 6 months of life, that the baby's immune system is still developing. So the baby is not born with a completely mature immune system. And so those immune factors that are in breast milk are important, and they're not present in artificial feedings like infant formula. Second, we know that the baby's digestive system is not fully developed as well, and that the baby can much more effectively absorb the nutrients that it needs from breast milk than it can from nonhuman milk—from artificial milk or milk from other animals. And then of course, there are other benefits. There are probably emotional benefits and other benefits for both the parents and the baby. And that's the basis of the recommendations, not only by the American Academy of Pediatrics[iii] but also the World Health Organization[iv] for exclusive breastfeeding during the first 6 months of life.

HOOD: Dr. Goldman, are you concerned that with all of the publicity about chemical contaminants, as you've discussed, in human milk, that that publicity may be distorting the message and actually discouraging mothers from nursing their babies?

GOLDMAN: I am concerned that sometimes mothers may be getting many mixed messages about breastfeeding, not only in terms of being concerned about the possibility of contaminants in the breast milk, but also that when mothers go back to work, that oftentimes the workplace is not conducive to breastfeeding. Many women live in home environments that are not supportive of breastfeeding because to be able to breastfeed women need to have good nutrition and adequate amounts of rest and fluids and an opportunity to do that, a place where they can go to do that. And so there are many factors in society that tend to make it more difficult for women to breastfeed.

Now, would I say that means we shouldn't talk about the pollutants in breast milk? I don't feel that way. I think we need to be honest about that because as a society if we're doing things that are, over time, likely to threaten our health, such as by putting

contaminants into breast milk, we need to raise concerns about that. We just need to do that in a way that's appropriate and that prompts what I believe is the right action—which is to stop exposing ourselves to these persistent substances—but not something inappropriate, which would be to say don't breastfeed.

HOOD: Dr. Goldman, what do you recommend that we do to make human milk even safer than it is today? Are there any actions on a macro level that we can take to reduce the presence of these contaminants we've been discussing?

GOLDMAN: Yes, I think so. I think on a macro level, what we need to do is develop policies where we are much more vigilant about avoiding the use of persistent chemicals and pesticides. We do not want to have anything that's persistent and going to build up in the environment or in our bodies in our food supply, in the air we breathe, in the water we drink. Because we've learned over and over and over again that these persistent substances, if they do have adverse health effects, then over time there's very little we can do about them.

HOOD: Is there anything mothers can do to optimize the purity of their own breast milk?

GOLDMAN: You know, there's some commonsense things that people can do. And one thing is, during pregnancy and while breastfeeding a baby, not to have routine pesticide applications. Now sometimes there are pest control situations that just demand an application, but sometimes people have contracts with pest applicators where they're just coming on a routine basis to apply pesticides—probably a good idea, just as a matter of precaution, not to do that during pregnancy and while breastfeeding. Then, if there is a pest control problem, to use softer means of controlling pests, like bait stations and nontoxic pest control alternatives where there's not going to be contact with the mother, or for that matter with the father or other children in the household.

The other thing that is probably also a matter of common sense, a lot of times when people are expanding their families, they begin to do things around the house like creating nurseries or remodeling, and it's a really good idea for women who are pregnant or who are breastfeeding to try to avoid exposure or contact with the products that are

used in those kinds of processes. You can even be out of the house when these activities are under way. You can make sure that the house is aired out before going back into the house, or even just wait, delay on doing those activities until you've gotten through the pregnancy and breastfeeding. And some of the products that can be used, like for example some paint strippers and certain kinds of solvents that people might use, are pretty powerful.

The other thing that women can do is to pay attention to fish advisories, because many of these persistent chemicals accumulate in water bodies, and we know that there are certain places where the fish are highly contaminated, and there are warnings that are issued, and to pay attention to those warnings and to avoid eating fish that are contaminated, either locally or we also know certain species of fish, such as the mackerel fish and shark have very high levels of some of these persistent chemicals. You know, there are organizations that have published lists that are guides that you can take when you go shopping to help point you to the safer fish and safer seafood.[v,vi]

HOOD: Do you have any advice for mothers who, for whatever reason, will give their babies formula?

GOLDMAN: Well, I think that generally infant formula is safe. It's very tightly regulated by the U.S. Food and Drug Administration in the U.S. and by other regulators in other parts of the world. One major concern with infant formula—if you use the kind that is concentrated powder—the water that you use to mix up the formula, to make sure that the water is safe water. And another thing that's very, very important if you use infant formula that you refrigerate, to make sure that it's adequately refrigerated, because poor refrigeration of infant formula can actually cause infections, and in fact I have seen such infections here in the United States. This is not just a problem in developing countries. Of course, using U.S. brands—I wouldn't go abroad to get your infant formula; I wouldn't use off brands of infant formula.

I think that the important point is that, as they say, breast is best, and that human milk <u>is</u> the best food for an infant and that whenever possible we need to support breastfeeding. Not just women who are the mothers of babies, but really everybody needs to support

breastfeeding. Family members need to give women support. Employers need to give women support. We need to do much more as a society to support this activity, including taking steps to make the breast milk safer by preventing persistent chemicals from getting into our bodies.

AHEARN: That was Dr. Lynn R. Goldman talking with science writer Ernie Hood. Dr. Goldman is principal investigator for the Johns Hopkins University Center for the National Children's Study.[ii]

And that's *The Researcher's Perspective*. I'm Ashley Ahearn. Thanks for downloading.[vii]

References and Notes

[i] Wang RY, Needham LL. Environmental chemicals: from the environment to food, to breast milk, to the infant. J Toxicol Environ Health B Crit Rev 10(8):597–609 (2007); doi:10.1080/10937400701389891.

[ii] Subsequent to the original recording of this podcast, Goldman was named dean of **t**he George Washington University School of Public Health and Health Services.

[iii] American Academy of Pediatrics. Policy statement: breastfeeding and the use of human milk. Pediatrics 115(2):496–506 (2005); doi:10.1542/peds.2004-2491.

[iv] WHO, UNICEF. Global Strategy for Infant and Young Child Feeding. Geneva, Switzerland:World Health Organization (2003) Available: http://tinyurl.com/6fbynpn [accessed 1 Feb 2011].

[v] List of Seafood Health Alerts: How Many Meals Are Safe to Eat per Month? [website]. Washington, DC:Environmental Defense Fund (updated 20 Jan 2011). Available: http://tinyurl.com/2wg625 [accessed 1 Feb 2011].

[vi] Seafood Recommendations [website]. Monterey, CA:Monterey Bay Aquarium (2011). Available: http://tinyurl.com/n4qjsb [accessed 1 Feb 2011].

[vii] For more information see Mead MN. Contaminants in human milk: weighing the risks against the benefits of breastfeeding. Environ Health Perspect 116(10):A426–A434 (2008); doi:10.1289/ehp.116-a426.

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